

Each of claims 1 to 12 were rejected under 35 U.S.C. §102(b) (it is believed that the examiner intended to refer to 35 U.S.C. §103 at paragraph 6) over Muramoto 4,884,113. Reconsideration of this rejection is requested.

Muramoto is totally different in structure and operation from the present invention. Structurally, applicant provides an epitaxial junction-receiving layer having a greater concentration at its top (region 2d) than at its bottom (region 21) with the top and bottom regions being coextensive with one another and with their substrate.

In contrast, Muramoto has a single junction-receiving epitaxial silicon layer 10b containing spaced diffusions 11/12. Thus, region 12 is not taught to be a grown epi layer and is quite obviously a diffusion. It is also quite obviously not a layer which is coextensive with the N- epi 10b, as now required in the claims.

Further, Muramoto functions differently than applicants device. Thus applicants structure acts to reduce the JFET resistance component between spaced bases, and to reduce the epi resistance as well (by reducing the resistivity and thickness of the high resistivity region of the epi. This is clearly absent in the reference.

Referring now to claim 1 (amended) the claim requires:

a first layer of epitaxial silicon...a second layer of epitaxial silicon
formed atop the surface of said first layer and coextensive
therewith...the concentration of impurities in said second layer
being greater than the concentration of impurities in said first
layer...

Muramoto does not disclose first and second epi layers which are coextensive (or with junctions formed only in the upper higher concentration layer (to reduce JET resistance). It is submitted that no such structure is either disclosed or would be made obvious to one skilled in this art from Muramoto, and that claim 1 patentably distinguishes for Muramoto.

Claims 3 and 4 require that the thickness of the first (and lower) layer is greater than that of the second and top layer. No such disclosure appears in Muramoto.

Claims 5 to 8 and 12 require that the unique feature that the combined thickness of the two layers is less than that of a single prior art layer, a feature not suggested by Muramoto.

Claim 10 calls for applicants novel invention more broadly in terms of graded concentration. Thus, a single epi layer can have a diffused region in its upper surface to increase the concentration of a given carrier type and thus obtain the benefits of the two discrete layer structure of claim 1.

Thus, claim 10 (amended) calls for:

...a layer of epitaxial silicon on the upper surface of said substrate and coextensive therewith; said layer having a graded concentration...from its top free surface...and having an average impurity concentration which is more than the average concentration of the bottom portion of said layer...

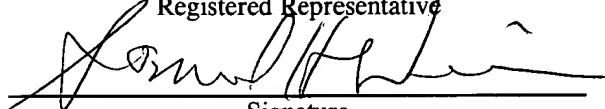
Clearly, Muramoto has no such layer which is coextensive with the substrate and which provides the increased concentration in the JFET region between spaced diffusions.

In view of the foregoing remarks it is respectfully submitted that the claims as amended are patentably distinguished from Muramoto and allowance of the claims is respectfully requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Asst. Commissioner for Patents, Washington, D.C. 20231, on May 15, 2000

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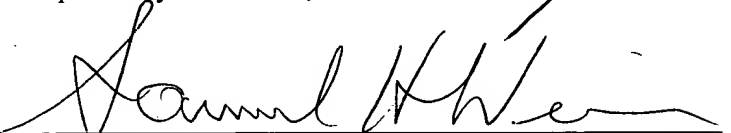


Signature

May 15, 2000

Date of Signature

Respectfully submitted,



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Registration No. ¹⁸⁵¹⁰ May 15, 2000

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